Request to Archive
With The National Centers for Environmental Information
For GOES-R Level 0 Space Weather Data
Provided by NGDC>STP

2015-12-29

This information will be used by NCEI to conduct an appraisal and make a decision on the request.

1. Who is the primary point of contact for this request?

Margaret Tilton
DOC/NOAA/NESDIS/NCEI
GOES-R Data Manager
303-497-6223
margaret.tilton@noaa.gov

2. Name the organization or group responsible for creating the dataset.

DOC/NOAA/NESDIS/OSPO> Office of Satellite and Product Operations, NESDIS, NOAA, U.S. Department of Commerce; DOC/NOAA/NESDIS/NCEI> National Centers for Environmental Information, NESDIS, NOAA, U.S. Department of Commerce

3. Provide an overview summarizing the scope of data you want to archive. Describe the outputs, data variables, including their measurement resolution and coverage.

The data to be archived are Level 0 (L0) data from the GOES-R series satellites (GOES-R/T/U/V). These data will be archived in two formats:

1.) Full-resolution unformatted data received from the Level Zero Storage System (LZSS). These are instrument and spacecraft calibration data with communications artifacts (e.g. synchronization frames, communications headers) removed. These data will be tarred on a daily basis, and the resulting tarball will be the AIP. Additional information:

- Files come from each of the GOES-R space-looking instruments--SUVI, EXIS, MAG and SEISS.
- Science, engineering and diagnostic data are included, along with their instrument calibration parameters.
- Data files are CCSDS packets in a netCDF container.
- The temporal reference for L0 products is Coordinated Universal Time (UTC).

All higher-level GOES-R products are derived from this L0 data. The purpose of the L0 Products is to gather and trend geophysical data from the sun to the Earth, including Earth observations from space.

L0 data files are further described in the Product Definition and User's Guide (PUG) (DOC Control # 7035538, Rev D, Volume 2), as follows:

EXIS: Tables 4.2.1, 4.2.2-1, 4.2.2-2
MAG: Tables 4.4.1, 4.4.2-1, 4.4.2-2
SEISS: Tables 4.5.1, 4.5.2-1, 4.5.2-2
SUVI: Tables 4.6.1, 4.6.2-1, 4.6.2-2

2.) Aggregated and reformatted L0 data. STP plans to reformat L0 data for all instruments so that CCSDS packets

have been decoded and are in user-accessible format. For all instruments except SUVI, STP will aggregate the reformatted files into daily .nc files. (SUVI data consist of individual images and are not easily aggregated.)

In addition, NCEI will be archiving L0 ISO-SERIES Metadata files for each Space Weather instrument. These change infrequently and their size is negligible.

4. What is the time period covered by the dataset? (YYYY-MM-DD, YYYY-MM or YYYY)
From 2016-01-01
Ongoing as continuous updates to the data record

5. Edition or version number(s) of the dataset:
GOES-R Series (R/S/T/U)

6. Approximate date when the dataset was or will be released to the public:
2017-04-15

7. Who are the expected users of the archived data? How will the archived data be used?
Data will be used mostly by the NCEI-CO Space Weather Team. External access to the operational data should be permitted via the data manager and eventually an automated system.

8. Has the dataset undergone user evaluation and/or an independent review process? Did NCEI participate in design reviews?
No

9. Describe the dataset's relationship to other archived datasets, such as earlier versions or related source data. If this is a new version, how does it improve upon the previous version(s)?
This dataset will provide data from the GOES-R series satellites. NGDC has been responsible for archiving data for previous GOES satellites, most recently GOES-N/O/P.

10. List the input datasets and ancillary information used to produce the data.
The unformatted data are netCDF-4 files that contain the Consultative Committee for Space Data Systems (CCSDS) data packets. They are the result of very limited processing of the raw telemetry data that the ground station obtains directly from GOES-R. The unformatted data are inputs to the formatted data.

11. List web pages and other links that provide information on the data.
GOES-R Product User's Guide (PUG), vol.2
Interfaces DTWT Modeling Document

12. List the kinds of documents, metadata and code that are available for archiving. For example, data format specifications, user guides, algorithm documentation, metadata compliant with a standard such as ISO 19115, source code, platform/instrument metadata, data/process flow diagrams, etc.
1. Documents: PUG, vol 2 (most recent version); Spacecraft Telemetry and Command (ST&C) Handbook, aka GOES-RQ-11-0159. L0 series metadata are compliant with ISO 19115.

13. Indicate the data file format(s).
1. netCDF-4

14. Are the data files compressed?
gzip

15. Provide details on how the files are named and how they are organized (e.g., file_name_pattern_YYYYMM.tar in monthly aggregations).
File names will have the following format:

1. Unformatted files:

File names will follow the L0 File Naming Convention from the GOES-R program with two exceptions: dates are in MMDD format rather than DOY, and version number is used rather than creation date. Thus the format is as follows:

<env>_<DSN>_<PlatformID>_s<start_date>_e<end_date>_vX.Y.Z.ext.ext, where

<env> = two-digit environment variable
<DSN> = data short name, e.g. SEIS-L0-EHIS
<Platform_ID> = satellite, e.g. G16
<dates> = dates in YYYYMMDDHHMMSSs format. start_date will be start of first file, end_date will be end_date of last file.
<X.Y.Z> = processing version number. Since we are really only tarring data, version number doesn't reflect coding changes. However, in the unlikely event we receive updated data from LZSS, we can use the version number to insure a unique file name. This will ensure the new file gets submitted to the archive, since a duplicate file name does not automatically overwrite the first file.

2. Reformatted data:

These files will have the same name format except will also have "reformat" in their name:

<env>_<DSN>_<PlatformID>_s<start_date>_e<end_date>_reformat_v<X.Y.Z>.ext

The version number here reflects the version number of the aggregation/reformatting code.

Note that SUVI data will not be aggregated but will be reformatted.

3. ISO-SERIES metadata files:

<Inst_name>-L0-ISO-SERIES, where <Inst_name> is EXIS, MAG, SEIS or SUVI.

16. Explain how to access sample data files and/or a file listing for previewing. If it is not available now, when will it be available?
Sample data files are available from the Level Zero Storage System (LZSS). NCEI has pulled examples of these files.

17. What is the total data volume to be submitted?
Continuous Data: data volume rate for a continuous data production.
Total Data Volume Rate: 70.4TB per Year
Data File Frequency: 7204 per Day
Data Production Start: 2016-10-01

18. Are later updates, revisions or replacement files anticipated? If so, explain the conditions for submitting these additional data to the archive.

Additional data will be produced when later satellites in the GOES-R series are launched.

19. Describe the server that will connect to the ingest server at NCEI for submitting the data.

Physical Location:	Wallops Island LZSS server
System Name:	Level-0 Storage System (LZSS)
System Owner:	Steve Grippando (Steven.Grippando@noaa.gov)
Additional Information:	Add comments as needed on applicable data types, etc.

20. What are the possible methods for submitting the data to NCEI? Select all that apply.

Manual data pull from LZSS / NCEI's Common Ingest system

21. Identify how you would like NCEI to distribute the data. Web access support depends on the resources available for the dataset.

22. Will there be any distribution, usage, or other restrictions that apply to the data in the archive?

Constraint Type	Description
Use	Data acquired during Post-launch Testing (PLT) are to be considered preliminary test data.

23. Discuss the rationale for archiving the dataset and the anticipated benefits. Mention any risks associated with not archiving the dataset at NCEI.

This archival fits within NGDC's mandate to support GOES-R cal/val and sensor Operations and Maintenance (O&M). The GOES-R L0 space weather dataset is needed to validate GOES-R Level 1b (L1b) products. In addition, the L0 data contain environmental parameters not available in the L1b products, i.e. alpha particles.

24. Are the data archived at another facility or are there plans to do so? Please explain.

No

25. Is there an existing agreement or requirement driving this request to archive? Have you already contacted someone at NCEI?

This is an internally generated requirement needed to support NGDC's responsibility for supporting GOES-R cal/val and sensor Operations and Maintenance (O&M). Reference: Ltr dtd 13 Mar 13 from Steven Thibault regarding "Confirmation of Archive Requirements for GOES-R Data," NESDIS-SE-2013-01.

26. Do you have a data management plan for your data?

No

27. Have funds been allocated to archive the data at NCEI?

Initial seed funding of $50K was provided to establish this conduit. Annual O&M funding will be provided to support the archive through 2036.

28. Identify the affiliated research project, its sponsor, and any project/grant ID as applicable.

N/A

29. Is there a desired deadline for NCEI to archive and provide access to the data?

Archive by:	2016-10-01
Accessible by:	2016-10-01

30. Add any other pertinent information for this request.

Note 1: Because NCEI has not yet created any reformatted files, the size of these files is estimated to be the same as the unformatted file size.

Note 2: Data volume listed in item #17 is for two satellites. The volume and number of files/day will be half this when only GOES-R is operational. At times during the GOES-R series mission there may also be one or two satellites in storage. These will generate significantly less data than the operational satellites, as EXIS and SUVI (the biggest contributor) will not be transmitting data.

Note 3: Data will be released to the public after post-launch testing (PLT), i.e. approximately six months after launch. However, data should be accessible to NCEI staff immediately after the instruments are turned on.